

LONDON- WEST MIDLANDS ENVIRONMENTAL STATEMENT

Volume 5 | Technical Appendices

CFA8 | The Chalfonts and Amersham

Operational assessment (SV-004-008)

Sound, noise and vibration

November 2013

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Department
for Transport

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Appendix SV-004-008

Environmental topic:	Sound, noise and vibration	SV
Appendix name:	Operation assessment	004
Community forum area:	The Chalfonts & Amersham	008

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1 Introduction

1.1 Structure of the sound, noise and vibration appendices

- 1.1.1 The sound, noise and vibration appendices comprise four sections. The first of these details the methodology used (Appendix SV-001-000) and relates to the sound, noise and vibration assessment for all community forum areas (CFA).
- 1.1.2 For The Chalfonts & Amersham community forum area (CFA08), the other three sections are as follows:
- baseline sound, noise and vibration (Appendix SV-002-008);
 - construction sound, noise and vibration (Appendix SV-003-008); and
 - operational sound, noise and vibration (Appendix SV-004-008) (this appendix).
- 1.1.3 The outcomes of this assessment are summarised in Volume 2: CFA08 Report, Chapter 11 Sound, Noise and Vibration.
- 1.1.4 Maps referred to throughout the sound, noise and vibration appendices are contained in the Volume 5 sound, noise and vibration map book.
- 1.1.5 This appendix presents the likely noise and vibration impacts, effects and significant effects arising from the operation of the Proposed Scheme for The Chalfonts & Amersham area on:
- people, primarily where they live ('residential receptors') in terms a) individual dwellings and b) on a wider community basis, including any shared community spaces; and
 - community facilities such as schools, hospitals, places of worship, and also commercial properties such as offices and hotels, collectively described as 'non-residential receptors' and 'quiet areas'.
- 1.1.6 The assessment of likely impacts, effects and significant effects from operational noise and vibration on agricultural, community, ecological or heritage receptors and the assessment of tranquillity are presented in the following documents within Volume 5:
- Agriculture, forestry and soils Appendix AG-001-008
 - Community Appendix CM-001-008
 - Ecology Appendix EC-001-002
 - Heritage Appendix CH-003-008
 - Landscape and Visual Appendix LV-001-008

1.2 Evaluation of impacts and effects

- 1.2.1 This appendix provides a quantitative assessment of operational noise and vibration impacts and effects and a qualitative assessment of likely significant effects, based on the impacts and effects identified and other local context information consistent with the scope and methodology defined for the Proposed Scheme.

- 1.2.2 Indirect effects arising from permanent changes in traffic patterns on the existing road and rail networks as a consequence of the Proposed Scheme are also reported in this appendix, where they would occur within the study area as defined in Volume 5: Appendix SV-001-000.
- 1.2.3 Route-wide impacts, effects and significant effects associated with noise or vibration from the operation of the Proposed Scheme are reported in Volume 3.
- 1.2.4 Off-route effects of noise or vibration arising from the operation of the Proposed Scheme, including those likely to arise from permanent changes in traffic patterns on roads or railways outside of the study area for direct effects are reported in Volume 4.
- 1.2.5 In undertaking the assessment of sound, noise and vibration, consistent with EIA Regulations and emerging National Planning Practice Guidance¹ a differentiation between impacts effects, adverse effects and significant effects is made. Further information is provided in Volume 5: Appendix SV001-000.
- 1.2.6 The assessment of impacts has been undertaken at assessment locations that are representative of a number of dwellings or other sensitive receptors. The Assessment Locations employed in this assessment are presented on map series Sv-02 in the CFA08 Volume 5 sound, noise and vibration map book.

¹ National Planning Practice Guidance – Noise <http://planningguidance.planningportal.gov.uk> ; refer to the table summarising noise exposure hierarchy

2 Scope, assumptions and limitations

2.1 Regional and local policy guidance

2.1.1 The policy framework for sound, noise and vibration is set out in Volume 1 and in Appendix SV-001-000. As part of the engagement with local authorities through the Planning Forum Sub Group (Acoustics), information regarding any specific local planning guidance in respect of noise and vibration has been requested. Whilst no information has been received for this study area via the Planning Forum Sub Group (Acoustics), the following local policy guidance on noise and vibration has been identified:

- Chiltern District Council Local Plan - Consolidated September 2007 & November 2011

2.1.2 This guidance has been considered as part of formulating the detailed application of the impact and significance criteria set out in Volume 5: Appendix SV-001-000.

2.2 Engagement

2.2.1 Details of engagement on a route-wide basis with the local and county authorities' Environmental Health Practitioners via the Planning Forum Sub Group - Acoustics, is set out in Volume 1, Section 8.

2.2.2 Engagement with communities has been via the Community Forums, as set out in Volume 1. In respect of sound, noise and vibration the following discussions have taken place:

- general discussions in respect of local issues, including possible ways to avoid and mitigate the potential impacts of noise or vibration
- September / October 2012; a specific presentation about sound, noise and vibration with discussion afterwards with one of the project team specialists;
- November / December 2012; specific request for the Community Forum to propose baseline sound monitoring locations;
- January / February 2013; feedback to the Community Forum on any proposed baseline monitoring locations; and
- verbal / written response to questions on sound, noise and vibration.

2.3 Methodology

2.3.1 The methodology used for the assessment of airborne sound, ground-borne sound and vibration impacts and the determination of significant effects is defined in the Scope and Methodology Report (SMR) (Volume 5: Appendix CT-001-000/1), is clarified in a number of areas by the SMR addendum (Volume 5: Appendix CT-001-000/2). Further information is contained in Volume 5: Appendix SV-001-000.

2.4 Assumptions

- 2.4.1 Route-wide assumptions are outlined in Volume 1, Section 8, and are further detailed in Volume 5: Appendix SV-001-000. Local assumptions that apply to the assessment of operational sound noise and vibration within this CFA are set out in Volume 2: Report 08.

2.5 Local limitations

- 2.5.1 None.

3 Environmental baseline

3.1 Existing baseline

- 3.1.1 The majority of receptors adjacent to the line of the route are not currently subject to appreciable vibration and therefore vibration at all receptors has been assessed using the absolute vibration criteria as described in Volume 5: Appendix SV-001-000.

3.2 Future baseline

- 3.2.1 The operational sound, noise and vibration assessment assumes a baseline year of 2026. The approach to scaling the baseline from the survey year to 2026 is presented in Appendix SV-001-000 and specifically for this CFA in Appendix SV-002-003.

4 Effects arising during operation

4.1 Introduction

4.1.1 The assessment is reported first for ground-borne sound and vibration and then for airborne sound. Under each of these headings, the results of the quantitative identification of impacts and effects are presented. This is followed by the identification of significant effects and the evidence used to support these conclusions.

4.1.2 The structure of this assessment report is:

- Avoidance and mitigation measures
- Quantitative identification of impact and effects
 - Ground-borne sound and vibration
 - Residential
 - Non-residential
- Assessment of impacts and effects
 - Residential receptors: direct effects – dwellings
 - Residential receptors: direct effects – communities
 - Residential receptors: indirect effects
 - Non-residential receptors: direct effects
 - Non-residential receptors: indirect effects
 - Cumulative effects from the proposed scheme and other committed development.

4.2 Avoidance and mitigation measures

4.2.1 These are set out in Volume 2: Report 08.

4.3 Quantitative identification of impacts and effects

Ground-borne sound and vibration

4.3.1 Assessment locations defined for the quantitative assessment of impacts are shown on map series SV-02 in the CFA08 Volume 5 sound, noise and vibration map book.

4.3.2 For each Assessment Location, the assessment results for residential and non-residential receptors are presented in Table 1. Explanation of the information in Table 1 is provided in Appendix SV-001-000, with the following additional notes.






B	For non-residential receptors further detail about the type of effect is set out in the text of Volume 5: Appendix SV-001-000.
NA	Type of effect - Generally no adverse effect
A	Type of effect - Adverse effect
S	Type of effect - Significant adverse effect
VDV	Vibration Dose Value
~	The forecast adverse effects are not considered to be significant on a community basis (further information on methodology is provided in Volume 5: Appendix SV-001-000).
^	The impact methodology has identified a potential significant effect at this receptor which based upon further qualitative information is not considered to be a likely significant effect. Please refer the end of this Appendix for further information.
	Where the significant effect column is highlighted in pink, then a significant effect is identified at the referenced residential community area, or individual receptor.
	Yellow denotes a low ground-borne noise impact or a minor ground-borne vibration impact
	Orange denotes a medium ground-borne noise impact or a moderate ground-borne vibration impact
	Red denotes a high ground-borne noise impact or a major ground-borne vibration impact
	Dark red denotes a very high ground-borne noise impact

Table 1: Ground-borne sound and vibration levels, noise and vibration impacts and effects

Assessment location		Impact Criteria				Significance criteria								Significant effect
ID	Area represented	Ground-borne sound level dB L _{pASmax}	VDV m/s ^{1.75} Daytime (07:00 - 23:00)	VDV m/s ^{1.75} Night time (23:00 – 07:00)	% increase or decrease in VDV	Number of impacts represented	Type of effect	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Mitigation of effect	
621433	Roberts Lane, Chalfont St. Peter	17	0.04	0.02	-	2	NA	R	T	-	-	-	-	
621434	Roberts Lane, Chalfont St. Peter	14	0.04	0.02	-	3	NA	R	T	-	-	-	-	
621435	Roberts Lane, Chalfont St. Peter	13	0.03	0.02	-	2	NA	R	T	-	-	-	-	
621436	Roberts Lane, Chalfont St. Peter	11	0.03	0.02	-	1	NA	R	T	-	-	-	-	
621438	Roberts Lane, Chalfont St. Peter	11	0.03	0.02	-	4	NA	R	T	-	-	-	-	
621439	Roberts Lane, Chalfont St. Peter	11	0.03	0.01	-	4	NA	R	T	-	-	-	-	
621440	Roberts Lane, Chalfont St. Peter	10	0.03	0.01	-	4	NA	R	T	-	-	-	-	
621443	Roberts Lane, Chalfont St. Peter	10	0.03	0.01	-	4	NA	R	T	-	-	-	-	
621452	Rickmansworth Lane, Chalfont St. Peter	14	0.04	0.02	-	2	NA	R	T	-	-	-	-	
621456	Chalfont Centre For Epilepsy, Chalfont St. Peter	15	0.04	0.02	-	1	NA	R	T	-	-	-	-	
621476	Woodbank Drive, Chalfont St. Giles	12	0.03	0.02	-	4	NA	R	T	-	-	-	-	
621480	Woodbank Drive, Chalfont St. Giles	9	0.03	0.01	-	1	NA	R	T	-	-	-	-	
621481	London Road, Chalfont St. Giles	11	0.03	0.02	-	3	NA	R	T	-	-	-	-	
621482	London Road, Chalfont St. Giles	10	0.03	0.01	-	1	NA	R	T	-	-	-	-	
621483	London Road, Chalfont St. Giles	10	0.03	0.01	-	9	NA	R	T	-	-	-	-	
621488	Stylecroft Road, Chalfont St. Giles	21	0.06	0.03	-	1	NA	R	T	-	-	-	-	
621489	Stylecroft Road, Chalfont St. Giles	20	0.05	0.03	-	1	NA	R	T	-	-	-	-	
621490	Stylecroft Road, Chalfont St. Giles	21	0.06	0.03	-	2	NA	R	T	-	-	-	-	
621491	The Brow, Chalfont St. Giles	21	0.06	0.03	-	1	NA	R	T	-	-	-	-	

Assessment location		Impact Criteria				Significance criteria								Significant effect
ID	Area represented	Ground-borne sound level dB L _{pASmax}	VDV m/s ^{1.75} Daytime (07:00 - 23:00)	VDV m/s ^{1.75} Night time (23:00 – 07:00)	% increase or decrease in VDV	Number of impacts represented	Type of effect	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Mitigation of effect	
621492	The Brow, Chalfont St. Giles	22	0.06	0.03	-	1	NA	R	T	-	-	-	-	
621493	The Brow, Chalfont St. Giles	19	0.05	0.03	-	1	NA	R	T	-	-	-	-	
621494	The Brow, Chalfont St. Giles	18	0.05	0.02	-	1	NA	R	T	-	-	-	-	
621495	The Brow, Chalfont St. Giles	17	0.04	0.02	-	1	NA	R	T	-	-	-	-	
621498	The Brow, Chalfont St. Giles	21	0.06	0.03	-	7	NA	R	T	-	-	-	-	
621499	The Brow, Chalfont St. Giles	18	0.05	0.02	-	1	NA	R	T	-	-	-	-	
621500	The Brow, Chalfont St. Giles	16	0.04	0.02	-	2	NA	R	T	-	-	-	-	
621501	The Brow, Chalfont St. Giles	12	0.03	0.02	-	2	NA	R	T	-	-	-	-	
621502	Valentine Way, Chalfont St. Giles	9	0.03	0.01	-	1	NA	R	T	-	-	-	-	
621503	The Brow, Chalfont St. Giles	15	0.04	0.02	-	2	NA	R	T	-	-	-	-	
621504	The Brow, Chalfont St. Giles	12	0.03	0.02	-	2	NA	R	T	-	-	-	-	
621505	Valentine Way, Chalfont St. Giles	10	0.03	0.01	-	1	NA	R	T	-	-	-	-	
621507	Valentine Way, Chalfont St. Giles	9	0.03	0.01	-	2	NA	R	T	-	-	-	-	
621513	Stylecroft Road, Chalfont St. Giles	10	0.03	0.01	-	2	NA	R	T	-	-	-	-	
621514	Stylecroft Road, Chalfont St. Giles	15	0.04	0.02	-	2	NA	R	T	-	-	-	-	
621517	Stylecroft Road, Chalfont St. Giles	11	0.03	0.02	-	2	NA	R	T	-	-	-	-	
621518	Stylecroft Road, Chalfont St. Giles	11	0.03	0.02	-	3	NA	R	T	-	-	-	-	
621519	Stylecroft Road, Chalfont St. Giles	12	0.03	0.02	-	1	NA	R	T	-	-	-	-	
621520	Stylecroft Road, Chalfont St. Giles	17	0.04	0.02	-	1	NA	R	T	-	-	-	-	
621521	Stylecroft Road, Chalfont St. Giles	14	0.04	0.02	-	2	NA	R	T	-	-	-	-	

Assessment location		Impact Criteria				Significance criteria								Significant effect
ID	Area represented	Ground-borne sound level dB L _{pASmax}	VDV m/s ^{1.75} Daytime (07:00 - 23:00)	VDV m/s ^{1.75} Night time (23:00 – 07:00)	% increase or decrease in VDV	Number of impacts represented	Type of effect	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Mitigation of effect	
621522	London Road, Chalfont St. Giles	11	0.03	0.02	-	1	NA	R	T	-	-	-	-	
621523	Stylecroft Road, Chalfont St. Giles	18	0.04	0.02	-	3	NA	R	T	-	-	-	-	
621524	Kings Road, Chalfont St. Giles	19	0.05	0.02	-	1	NA	R	T	-	-	-	-	
621527	Stylecroft Road, Chalfont St. Giles	11	0.03	0.01	-	3	NA	R	T	-	-	-	-	
621529	Kings Road, Chalfont St. Giles	14	0.04	0.02	-	1	NA	R	T	-	-	-	-	
621530	Cromwell Close, Chalfont St. Giles	11	0.03	0.01	-	4	NA	R	T	-	-	-	-	
621531	London Road, Chalfont St. Giles	25	0.07	0.04	-	2	NA	R	T	-	-	-	-	
621532	London Road, Chalfont St. Giles	19	0.05	0.02	-	3	NA	R	T	-	-	-	-	
621533	Kings Road, Chalfont St. Giles	21	0.06	0.03	-	4	NA	R	T	-	-	-	-	
621534	Cromwell Close, Chalfont St. Giles	13	0.03	0.02	-	2	NA	R	T	-	-	-	-	
621535	Cromwell Close, Chalfont St. Giles	12	0.03	0.02	-	5	NA	R	T	-	-	-	-	
621536	London Road, Chalfont St. Giles	18	0.05	0.02	-	3	NA	R	T	-	-	-	-	
621537	London Road, Chalfont St. Giles	16	0.04	0.02	-	3	NA	R	T	-	-	-	-	
621539	London Road, Chalfont St. Giles	26	0.08	0.04	-	5	NA	R	T	-	-	-	-	
621540	London Road, Chalfont St. Giles	20	0.05	0.03	-	1	NA	R	T	-	-	-	-	
621541	London Road, Chalfont St. Giles	16	0.04	0.02	-	3	NA	R	T	-	-	-	-	
621542	London Road, Chalfont St. Giles	13	0.03	0.02	-	5	NA	R	T	-	-	-	-	
621544	Kings Road, Chalfont St. Giles	13	0.03	0.02	-	3	NA	R	T	-	-	-	-	
621545	Orchard Road, Chalfont St. Giles	11	0.03	0.02	-	1	NA	R	T	-	-	-	-	
621557	London Road, Chalfont St. Giles	11	0.03	0.01	-	4	NA	R	T	-	-	-	-	

Assessment location		Impact Criteria				Significance criteria								Significant effect
ID	Area represented	Ground-borne sound level dB L _{pASmax}	VDV m/s ^{1.75} Daytime (07:00 - 23:00)	VDV m/s ^{1.75} Night time (23:00 – 07:00)	% increase or decrease in VDV	Number of impacts represented	Type of effect	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Mitigation of effect	
621570	High Street, Chalfont St. Giles	25	0.07	0.04	-	1	NA	R	T	-	-	-	-	
621571	High Street, Chalfont St. Giles	27	0.09	0.04	-	1	NA	R	T	-	-	-	-	
621572	High Street, Chalfont St. Giles	16	0.04	0.02	-	4	NA	R	T	-	-	-	-	
621573	High Street, Chalfont St. Giles	12	0.03	0.02	-	5	NA	R	T	-	-	-	-	
621580	High Street, Chalfont St. Giles	11	0.03	0.01	-	10	NA	R	T	-	-	-	-	
621583	High Street, Chalfont St. Giles	13	0.03	0.02	-	3	NA	R	T	-	-	-	-	
621584	High Street, Chalfont St. Giles	12	0.03	0.02	-	3	NA	R	T	-	-	-	-	
621589	Stratton Chase Drive, Chalfont St. Giles	12	0.03	0.02	-	1	NA	R	T	-	-	-	-	
621590	Stratton Chase Drive, Chalfont St. Giles	13	0.03	0.02	-	1	NA	R	T	-	-	-	-	
621591	Stratton Chase Drive, Chalfont St. Giles	12	0.03	0.01	-	2	NA	R	T	-	-	-	-	
621606	Mill Lane, Chalfont St. Giles	14	0.03	0.02	-	3	NA	R	T	-	-	-	-	
621608	Mill Lane, Chalfont St. Giles	18	0.04	0.02	-	2	NA	R	T	-	-	-	-	
621609	Mill Lane, Chalfont St. Giles	21	0.06	0.03	-	1	NA	R	T	-	-	-	-	
621610	Mill Lane, Chalfont St. Giles	19	0.05	0.02	-	1	NA	R	T	-	-	-	-	
621611	Mill Lane, Chalfont St. Giles	21	0.06	0.03	-	1	NA	R	T	-	-	-	-	
621613	Mill Lane, Chalfont St. Giles	12	0.03	0.02	-	1	NA	R	T	-	-	-	-	
621614	Mill Lane, Chalfont St. Giles	10	0.03	0.01	-	1	NA	R	T	-	-	-	-	
621617	Mill Lane, Chalfont St. Giles	16	0.04	0.02	-	1	NA	R	T	-	-	-	-	
621618	Mill Lane, Chalfont St. Giles	12	0.03	0.02	-	1	NA	R	T	-	-	-	-	
621619	Mill Lane, Chalfont St. Giles	10	0.03	0.01	-	1	NA	R	T	-	-	-	-	

Assessment location		Impact Criteria				Significance criteria								Significant effect
ID	Area represented	Ground-borne sound level dB L _{pASmax}	VDV m/s ^{1.75} Daytime (07:00 - 23:00)	VDV m/s ^{1.75} Night time (23:00 – 07:00)	% increase or decrease in VDV	Number of impacts represented	Type of effect	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Mitigation of effect	
621622	Stratton Chase Drive, Chalfont St. Giles	17	0.04	0.02	-	1	NA	R	T	-	-	-	-	
621623	Stratton Chase Drive, Chalfont St. Giles	12	0.03	0.02	-	1	NA	R	T	-	-	-	-	
621624	Stratton Chase Drive, Chalfont St. Giles	11	0.03	0.01	-	1	NA	R	T	-	-	-	-	
621625	Stratton Chase Drive, Chalfont St. Giles	18	0.05	0.03	-	1	NA	R	T	-	-	-	-	
621626	Stratton Chase Drive, Chalfont St. Giles	16	0.04	0.02	-	1	NA	R	T	-	-	-	-	
621627	Stratton Chase Drive, Chalfont St. Giles	15	0.04	0.02	-	1	NA	R	T	-	-	-	-	
621629	Stratton Chase Drive, Chalfont St. Giles	14	0.04	0.02	-	1	NA	R	T	-	-	-	-	
621630	Stratton Chase Drive, Chalfont St. Giles	12	0.03	0.02	-	1	NA	R	T	-	-	-	-	
621631	Stratton Chase Drive, Chalfont St. Giles	11	0.03	0.02	-	1	NA	R	T	-	-	-	-	
621636	Hill Farm Lane, Chalfont St. Giles	10	0.03	0.01	-	2	NA	R	T	-	-	-	-	
621638	Hill Farm Lane, Chalfont St. Giles	10	0.03	0.01	-	3	NA	R	T	-	-	-	-	
621647	Missenden Road, Amersham	23	0.06	0.03	-	1	NA	R	T	-	-	-	-	
622056	Roberts Lane, Chalfont St. Peter	19	0.05	0.02	-	1	NA	R	T	-	-	-	-	
621538	London Road, Chalfont St. Giles, (Restaurant)	18	0.04	0.02	-	1	B	G4/V3	T	-	-	-	-	
621571	Stone House, High Street, Chalfont St. Giles, (Office)	27	0.09	0.04	-	4	B	G4/V3	T	-	-	-	-	
621571	High Street, Chalfont St. Giles, (Building Society)	27	0.09	0.04	-	2	B	G4/V3	T	-	-	-	-	
621572	Pond House Dental Surgery, Pond House, High Street, Chalfont St. Giles, (Dental Surgery)	16	0.04	0.02	-	1	B	G4/V2	T	-	-	-	-	
621572	Chalfont St. Giles Community Library, High Street, Chalfont St. Giles, (Library)	16	0.04	0.02	-	1	B	G4/V3	T	-	-	-	-	

Assessment location		Impact Criteria				Significance criteria								Significant effect
ID	Area represented	Ground-borne sound level dB L _{pASmax}	VDV m/s ^{1.75} Daytime (07:00 - 23:00)	VDV m/s ^{1.75} Night time (23:00 – 07:00)	% increase or decrease in VDV	Number of impacts represented	Type of effect	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Mitigation of effect	
621572	Pond House, High Street, Chalfont St. Giles, (General Commercial)	16	0.04	0.02	-	1	B	G4/V3	T	-	-	-	-	
621573	The Green, High Street, Chalfont St. Giles, (Office)	12	0.03	0.02	-	1	B	G4/V3	T	-	-	-	-	
621573	The Green, High Street, Chalfont St. Giles, (Shopping)	12	0.03	0.02	-	1	B	G4/V3	T	-	-	-	-	
621573	The Green, High Street, Chalfont St. Giles, (Shopping)	12	0.03	0.02	-	1	B	G4/V3	T	-	-	-	-	
621580	Stonemead House, High Street, Chalfont St. Giles, (General Commercial)	11	0.03	0.01	-	1	B	G4/V3	T	-	-	-	-	
621580	Dental Excellence, The Old Bank House, High Street, Chalfont St. Giles, (Dental Surgery)	11	0.03	0.01	-	1	B	G4/V3	T	-	-	-	-	

Impact summary

- 4.3.3 The operational ground-borne noise and vibration impacts identified in Table 1 are summarised in Table 2.

Table 2: Summary of operational ground-borne noise and vibration impacts

	Number of ground-borne noise impacts			
	Low	Medium	High	Very High
Residential properties	0	0	0	0
Non-residential properties	0			
	Number of ground-borne vibration impacts			
	Minor	Moderate	Major	Risk of building damage
Residential properties	0	0	0	0
Non-residential properties	0			

Airborne sound: direct impacts and effects

- 4.3.4 The route is in tunnel throughout this area, therefore no assessment of airborne sound from the operation of trains is required.

4.4 Assessment of impacts and effects

Residential receptors: direct effects –individual dwellings

- 4.4.2 The mitigation measures will reduce airborne noise, ground-borne noise and ground-borne vibration inside all dwellings such that it will not reach a level where it would significantly affect residents.

Residential receptors: direct effects –communities

- 4.4.3 The avoidance and mitigation measures in this area will avoid ground-borne noise and vibration effects on all residential communities in this area.

Residential receptors: indirect effects

- 4.4.4 The transport assessment presented in Volume 5: Appendix TR-001-000, has been used to identify those roads or railways within this study area where the alignment remains as at present, but a change in flow or composition is identified which is greater than the screening criteria defined in Volume 5: Appendix SV-001-000. No roads or railways which exceed the criteria defined in Volume 5: Appendix SV-001-000 have been identified in this study area.
- 4.4.5 The assessment of operational noise and vibration indicates that significant indirect effects on residential receptors are unlikely to occur in this area.

Non-residential receptors: direct effects

- 4.4.6 The assessment of operational noise and vibration indicates that significant direct effects on non-residential receptors are unlikely to occur in this area.

Non-residential receptors: indirect effects

- 4.4.7 The transport assessment presented in Volume 5: Appendix TR-001-000, has been used to identify those roads or railways within this study area where the alignment remains as at present, but a change in flow or composition is identified which is greater than the screening criteria defined in Volume 5: Appendix SV-001-000. No roads or railways which exceed the criteria defined in Volume 5: Appendix SV-001-000 have been identified in this study area.
- 4.4.8 The assessment of operational noise and vibration indicates that significant indirect effects are unlikely to occur on non-residential receptors in this area.

Cumulative effects

- 4.4.9 Details of properties being currently developed which were afforded planning approval before the safeguarding date are presented in Volume 5: Appendix CToo4-000. Within this area, the operational sound, noise or vibration associated with these developments in conjunction with the operation of the Proposed Scheme do not result in any significant cumulative effects.